

REMARKS

Claims 1-6 and new Claims 7-15 are active in the present application.

Reconsideration is respectfully requested.

The present invention relates to a flame-retardant polycarbonate composition.

Claim Amendments

Claims 1 and 2 have been amended in order to improve upon the language of the claims. Further, these claims specify that the second component is a flame retardant material as described on pages 12-13 of the text, and that the aromatic vinyl resin is the only type of flame retardant used in the composition. Further, the composition does not contain a halogen component as a flame retardant component (see pages 17 and 18 of the text). Claims 3 and 4 have been amended to improve select language in each claim. Finally, Claims 7-10 are new and find support on pages 10-12 of the text. New Claim 11 is supported by page 13, first paragraph of the text and Claim 12 is supported by page 24, lines 7 et seq. Support for Claim 13 can be found on page 25, lines 1 et seq and Claim 14 finds support on page 18, lines 12-21. New Claim 15 finds support in amended Claim 1. Entry of the amended claims and new claims into the record is respectfully requested.

Invention

The present invention is directed to a polycarbonate composition which, while achieving flame retardant properties, also maintains excellent impact resistant, heat resistant and recyclability properties. These characteristics are achieved in a formulation that comprises (A) from 90 to 99.98 % by weight of a polycarbonate resin, (B) from 0.01 to 5 % by weight of an acid base-containing aromatic vinyl resin as a flame retardant component, and (C) from 0.01 to 5 % by weight of a drip inhibitor, wherein the composition does not

contain halogen as a flame retardant component and the individual weight percentages are based on the total weight of components (A), (B) and (C).

The flame retardant polycarbonate resin composition of the invention does not contain halogen as a flame retardant component, but rather minor additives that exhibit good flame retardancy. The composition, as stated, has good impact resistance, good stability to the heat of molding, good wet heat resistance and good recyclability. Halogen-containing flame retardants are relatively effective as flame retardants, but are not desirable as such, because they often discharge harmful gases when resin compositions containing them are molded into molded objects. The released gases may also corrode the metals of the molds. Moreover, in the event molded objects prepared from such resins are incinerated, harmful substances may be discharged. Accordingly, preferred flame retardants are those which are non-halogen containing flame retardants as they are safe and do not pollute the environment.

Prior Art Rejection

Claims 1-4 stand rejected based on 35 USC 102(b) as anticipated by Mark et al, U. S. Patent 4,263,201. This ground of rejection is respectfully traversed.

The Mark et al patent is clearly relevant to the present invention in that it discloses a polycarbonate resin based composition that contains a flame retardant mixture and an anti-dripping agent. While the flame retardant component of the composition of the reference may be the like of a poly metal(potassium) polystyrene sulfonate, as disclosed at the middle of page 6 of the attached copy of the patent, and thus is an embodiment of the flame retardant material identified in the present claims as the base form of an acid group containing aromatic vinyl resin, it is clear that the flame retardant material is no such polysulfonate salt alone, but rather is a **mixture** of flame retardants of two components that are identified as (1) metal salts of a monomeric or polymeric organic sulfonates or organic carboxylates and (2)

monomeric or polymeric organic halogenated compounds (page 5, lines 21-26).

Accordingly, the reference does not teach a flame retardant composition that does not contain a halogen component as a flame retardant

That, in fact, both types of flame retardant materials must be used in the composition of the reference is clearly substantiated by the data provided in the examples of the text, where it is, in fact, clear that the second component of the mixture is the main component of the two-component flame retardant material. Thus, for instance, Example 14 of Table 2 of the text discloses a polycarbonate composition that contains 0.1 parts by weight polysodium poly(styrene-4-sulfonate) and 1.0 parts by weight DBDE (decabromodiphenylether). The composition exhibits a flame retardancy of V-0. On the other hand, the composition of Example 12, which contains polysodium poly(styrene-4-sulfonate) alone and no DBDE, exhibits a flame retardancy of V-II, which is the same value obtained for a composition which contains DBDE alone as the flame retardant (Example 13). Thus, the clear teaching of the reference is that both types of flame retardant agent are necessary to achieve the results of the invention disclosed in the patent.

In the present invention, on the other hand, the claims require that the flame retardant agent be the base form of an acid group containing aromatic vinyl resin alone. Examples 1-5 in Table 1 on page 31 of the present specification shows that for compositions of the invention that contain sodium (potassium) polystyrenesulfonate, which is an example of an acid group containing aromatic resin in salt form, the flame retardancy level that is achieved is V-0. At the same time the polycarbonate compositions exhibit good physical properties. Accordingly, applicants submit that not only does Mark et al not anticipate the present invention as claimed in the present claims which limit the claimed polycarbonate composition to formulations that contain only the indicated type of flame retardant, but the reference by virtue of the evidence in the examples of the patent would not lead the skilled artisan to

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formulate a polycarbonate composition that contains only the metal salt of a polymeric organic sulfonate or carboxylate alone as in the present invention. Accordingly, the stated ground of rejection is believed obviated and withdrawal of the rejection is respectfully requested.

Claim 5 stands rejected based on 35 USC 103(a) as obvious over Mark et al, U. S. Patent 4,263,201. This ground of rejection is respectfully traversed.

Claim 5 is directed to the specific aspect of the present invention in which the drip inhibitor is fibrils of polytetrafluoroethylene. However, this aspect of the invention is not an aspect of the invention upon which patentability depends. As is clear from the discussion above, the heart of the present invention is the incorporation of a specific type of flame retardant and a drip inhibitor in a polycarbonate, and this combination is believed neither taught nor suggested by Mark et al. Accordingly, since Claim 5 is dependent on a claim which is believed to be clearly distinguished over the reference, it too is believed patentable and withdrawal of the rejection is respectfully requested.

Claim 6 stands rejected based on 35 USC 103(a) as obvious over Mark et al, U. S. Patent 4,263,201, further in view of the admitted prior art. This ground of rejection is respectfully traversed.

It is clear that various types of molded objects used in various fields of applications have been prepared from polycarbonate based compositions. However, what distinguishes the invention as claimed in Claim 6 over the prior art is the specific polycarbonate formulation that is used which is a combination of a polycarbonate, the base form of an acid group containing aromatic vinyl resin and a drip inhibitor as the moldable composition that whenever molded provides an object of a different formulation. Such a combination is not suggested by the prior art, either Mark et al or the admitted prior art. Accordingly, the

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ground of rejection raised is believed obviated and withdrawal of the same is respectfully requested.

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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